ANDREI-LEONARD NICUSAN

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Work Experience

EPSRC Research Placement

University of Birmingham

June 2019 – August 2019

I was awarded one of the nine EPSRC Vacation Bursaries available for all the students within the College of Engineering and Physical Sciences. Working alongside Professors and Postdocs, during the two-month research placement I:

- Developed a novel algorithm for Positron Emission Particle Tracking (PEPT) based on Machine-Learning techniques.
- Wrote a scientific paper that was accepted for publication. It was selected as a **featured article** in Review of Scientific Instruments and a **Scilight** (Scientific Highlight) by AIP Publishing.
- Built a Python framework from the ground-up that unifies PEPT research, including tracking, simulation, data analysis and visualisation tools. **It was adopted by the University of Birmingham Positron Imaging Centre.**
- Networked with researchers from the University of Edinburgh, King's College London and the BMS pharmaceutical company. I held a presentation for the prospective application of PEPT in the medical and pharmaceutical fields, with the help of the developed framework.

Web Developer

MapleTA

July 2018 – August 2018

As part of a team of programmers, I wrote grading code for the MapleTA online assessment platform and developed web apps to be used across the University. I was the youngest participant in the project's six-year history. Some of the projects I worked on are:

- Stokes Flow Simulation: A web app that simulates the fluid flow around a falling sphere, made using JavaScript and WebGL. It is used by a senior lecturer in teaching.
- Tangent Plane Constructor: A web app that plots any 3D ($\mathbb{R}^2$) function and constructs the tangent plane at any given point. Made using JavaScript and the PlotlyJS library. It is used by a professor in teaching.

Banking Referent

BCR - Romanian Commercial Bank

August 2016 - September 2016

I worked alongside bankers and financial counsellors, preparing the documents needed for accounts and mortgages. I helped customers throughout the bank and presented the available banking options, while also having personal research projects involving financial products for the youth.

Volunteers' Coordinator

Targu-Mures National Philharmonic

October 2013 - April 2016

I coordinated a team of volunteers to prepare the weekly orchestra concerts, from advertising our events on social media and putting up posters, to helping international artists around the city.

Education

BEng Chemical Engineering

University of Birmingham

September 2017 – June 2020 (expected)

First-Class Honours Degree (expected)

Romanian Baccalaureate

"Alexandru Papiu Ilarian" National College - Mathematics and Computer Science Profile

September 2013 – June 2017

Graduated with a mark of 99.8%

Skills

Programming Languages & Frameworks

C | Python | JavaScript | Scala | C++ | Fortran | R | WebGL | Maple | MATLAB | Simulink | SQL | PHP | HTML / CSS | Sass | Liquid | Jekyll | LaTeX | Git

Development

Object-Oriented Frameworks | Algorithms for Industry | Git Integration | Intellectual Property

Operating Systems

GNU/Linux | macOS | Windows

Languages

English (CPE taken with A) ●●●●●

Romanian (Native) ●●●●●

German ●●●○○

Awards

2016 **National Chemistry Olympiad** Special Prize

2013 **National Mathematics Olympiad** Bronze Medal

2011 **National Mathematics Olympiad** Bronze Medal

National Mathematics and Chemistry Contests - Over 40 Awards

Other Activities

Academy+Plus – Private Programming School

Subsidiary of the French Ecole 42

July 2016 – August 2018

Through this experience, I got to challenge my mind in new and hard-working environments where independent study is paramount. I developed my computing and analytic skills, while also getting to teach students programming languages.

- More than 600 hours of working and 20 exams.
- First place at the 2016 admission contest.
- Developed numerous open-source algorithms and libraries.
- Coordinated local applicants as a staff member in 2017.

The Birmingham Project - IBM

Research Project for First Year Students

June 2018

Working as part of an interdisciplinary team, I tackled a 'real-world' challenge proposed by IBM, by conducting research and creating innovative online resources. We developed a solution to help students understand complex housing contracts that would use AI. Our team won the 1st place.

Through this experience, I acquired skills in conducting social research, project management, and understanding today's issues with copyright.

Lab Work

University of Medicine and Pharmacy of Targu-Mures

February 2014 – June 2017

As part of the National Chemistry Olympiads training, I was invited to join courses at the University of Medicine and Pharmacy in Targu Mures. I got to study spectroscopy and conduct organic syntheses alongside actual students, and also take part in research work.

In 2016, I was awarded by Gedeon Richter and given a scholarship to study chemistry at Babes-Bolyai University in Cluj-Napoca. In 2017 I was invited to have a personal tour of our town's Chemical Plant, AzoMures. I got to have a close look at the plant's units and see the manufacturing and management of ammonia and its co-products.

Debate

February 2014 – March 2017

As part of my town's first debate group, I helped popularise debating by coordinating and engaging in local activities such as contests, taster sessions and public debates. I participated in two national debating contests.

Classical and Jazz Guitar

July 2013 – April 2017

As part of my town's Arts School, I attended local concerts and festivals and played classical and jazz guitar, both as a performer and as a composer. I won the second place at the 2016 Samus GuitArt National Guitar competition.

Modules undertaken

First year:

- Modelling Concepts and Tools
- Introduction to Transport Phenomena
- Process Design and Analysis
- Reactions, Equilibria and Thermodyamics
- Chemistry for Engineers
- Properties and Applications of Materials
- German Level 5

Second year:

- Mass, Heat and Momentum Transport
- Process Integration and Unit Operations
- Computing for Design
- Reactors and Catalysis
- Process Systems and Principles of Process Control
- Product Design Exercise
- Sustainable Process Engineering
- Liquid Mixing in Industrial Systems

Other Courses

Functional Programming Principles in Scala

École Polytechnique Fédérale de Lausanne on Coursera

October 2019

- Given financial aid by Coursera to study for a certificate.
- 6-week course on functional programming by the creator of the Scala language, Prof. Martin Odersky.
- Achieved 100% overall score.

References

Dr. Kit Windows-Yule

Lecturer and EPSRC Research Placement Supervisor

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Dr. Sam Manger

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